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CLAIMS

We claim:

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- 1. An isolated nucleic acid molecule comprising
- (a) a nucleic acid molecule comprising a nucleic acid sequence that encodes an amino acid sequence of SEQ ID NO: 172 through 295;
 - (b) a nucleic acid molecule comprising a nucleic acid sequence of SEQ ID NO: 1 through 171;
 - (c) a nucleic acid molecule that selectively hybridizes to the nucleic acid molecule of (a) or (b); or
- 10 (d) a nucleic acid molecule having at least 60% sequence identity to the nucleic acid molecule of (a) or (b).
 - 2. The nucleic acid molecule according to claim 1, wherein the nucleic acid molecule is a cDNA.

3. The nucleic acid molecule according to claim 1, wherein the nucleic acid molecule is genomic DNA.

- 4. The nucleic acid molecule according to claim 1, wherein the nucleic acid molecule is a mammalian nucleic acid molecule.
 - 5. The nucleic acid molecule according to claim 4, wherein the nucleic acid molecule is a human nucleic acid molecule.
- 25 6. A method for determining the presence of a breast specific nucleic acid (BSNA) in a sample, comprising the steps of:
 - (a) contacting the sample with the nucleic acid molecule according to claim 1 under conditions in which the nucleic acid molecule will selectively hybridize to a breast specific nucleic acid; and
- 30 (b) detecting hybridization of the nucleic acid molecule to a BSNA in the sample, wherein the detection of the hybridization indicates the presence of a BSNA in the sample.
 - 7. A vector comprising the nucleic acid molecule of claim 1.



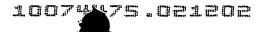


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- 8. A host cell comprising the vector according to claim 7.
- 9. A method for producing a polypeptide encoded by the nucleic acid molecule according to claim 1, comprising the steps of (a) providing a host cell comprising the nucleic acid molecule operably linked to one or more expression control sequences, and (b) incubating the host cell under conditions in which the polypeptide is produced.
 - 10. A polypeptide encoded by the nucleic acid molecule according to claim 1.

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- 11. An isolated polypeptide selected from the group consisting of:
- (a) a polypeptide comprising an amino acid sequence with at least 60% sequence identity to of SEQ ID NO: 172 through 295; or
- (b) a polypeptide comprising an amino acid sequence encoded by a nucleic acid molecule comprising a nucleic acid sequence of SEQ ID NO: 1 through 171.
 - 12. An antibody or fragment thereof that specifically binds to the polypeptide according to claim 11.
- 20 13. A method for determining the presence of a breast specific protein in a sample, comprising the steps of:
 - (a) contacting the sample with the antibody according to claim 12 under conditions in which the antibody will selectively bind to the breast specific protein; and
- (b) detecting binding of the antibody to a breast specific protein in the sample,
 45 wherein the detection of binding indicates the presence of a breast specific protein in the sample.
 - 14. A method for diagnosing and monitoring the presence and metastases of breast cancer in a patient, comprising the steps of:
- 30 (a) determining an amount of the nucleic acid molecule of claim 1 or a polypeptide of claim 11 in a sample of a patient; and
 - (b) comparing the amount of the determined nucleic acid molecule or the polypeptide in the sample of the patient to the amount of the breast specific marker in a normal control; wherein a difference in the amount of the nucleic acid molecule or the



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polypeptide in the sample compared to the amount of the nucleic acid molecule or the polypeptide in the normal control is associated with the presence of breast cancer.

- 15. A kit for detecting a risk of cancer or presence of cancer in a patient, said kit comprising a means for determining the presence the nucleic acid molecule of claim 1 or a polypeptide of claim 11 in a sample of a patient.
 - 16. A method of treating a patient with breast cancer, comprising the step of administering a composition according to claim 12 to a patient in need thereof, wherein said administration induces an immune response against the breast cancer cell expressing the nucleic acid molecule or polypeptide.
 - 17. A vaccine comprising the polypeptide or the nucleic acid encoding the polypeptide of claim 11.